Michigan Department of Community Health

Comprehensive Summary of
Michigan Nursing Corps Initiative (MNC)
2008-2011

Final Report

September 2013

Final Comprehensive Summary of Michigan Nursing Corps Initiative (MNC)

2008-2011

Background and Goals MNC 2008-2011:

Michigan's nursing shortage is estimated to be 18,000 by the year 2015. In 2007, Michigan nursing education programs were unable to admit over 4,000 qualified applicants due to a lack of faculty and clinical placements. Recent studies of the Michigan nursing workforce depict an imminent shortage of nurses and nursing faculty. More than 50% of current nursing faculty members are eligible to retire today. Of the 41% of full-time faculty members age 56 or older, half are expected to retire in the next five years. The nursing shortage will impact the availability and quality of healthcare as well as patient safety. Production of new nurses is critical to meeting the growing demand for quality medical care for Michigan's citizens.

An inventory of Michigan nursing education simulation technology equipment, use, student engagement, faculty engagement, funding, and future plans was conducted by the Michigan Public Health Institute through a survey of Michigan nursing education programs during the fall months of 2010. The administrator (nursing Deans and Directors) and the simulation leader (faculty member, laboratory manager, etc.) were surveyed at 56 schools/colleges of nursing; 87.2% of 112 surveys were completed and returned.

Most respondents felt that increased confidence, exposure to standardized experiences, improved critical thinking, and increased ability of the school/program to prepare students for clinical nursing experiences, to be the strongest benefits of simulation. The largest perceived barrier to using simulation was cost and maintenance of the technology, both hardware and software, with more than two-thirds of respondents indicating that cost was 'very much' a barrier. High priority areas for using more simulation technology included increasing opportunities to develop: a) decision-making skills, and b) complex clinical skills and psychomotor skills.

The proportion of faculty with advanced knowledge of simulation and the proportion of faculty that regularly integrate simulation activities in their courses were positively correlated. Respondents from schools that had allocated funds for faculty development were more than three times as likely to have a high proportion (≥ 10%) of faculty with advanced knowledge of simulation and were almost four times as likely to have a high proportion (≥ 25%) of faculty that regularly integrated simulation into their courses, compared to those that had not allocated funds for faculty development.

Respondents believed that innovative simulations would open up many new ways to teach and learn professional teamwork, problem-solving, cultural competency, and other content now taught in classrooms. Nursing education Administrators and Directors saw innovative simulations as important approaches to deal with the nursing faculty shortage and the shortage of clinical placements.

Survey respondents were asked to provide their opinion of the degree to which potential barriers actually were barriers to using simulation. The largest perceived barrier to using simulation was cost of equipment, with 64.1% of respondents indicating cost was 'very much' a barrier, followed by time needed to develop and implement scenarios and lack of faculty development in the area of simulation technology use in nursing education.
Appropriation of approximately $7.3 million by the Michigan Legislature over four consecutive years (2008 – 2011) funded two different MNC initiatives, one aimed at increasing the supply of nursing faculty and the other at leveraging technology to reduce the need for clinical faculty and placements.

Objectives:

- Increase the number of educational faculty in nursing programs in Michigan
- Increase capacity to education nursing students and accelerate program completion
- Expand and integrate simulation in all areas of nursing education programs
- Increase clinical faculty through training for clinical instruction
- Increase nursing educational program capacity through simulation education for Michigan's nursing students
- Assure consistency in providing a standardized format of instruction for core nursing curriculum

Outcomes:

- 52 Educational Faculty added to nursing programs in Michigan
- 91 Clinical Faculty added to nursing programs in Michigan
- 68 Educational Faculty positions filled at nursing programs in Michigan
- Capacity to train an additional 680 nurses in Michigan
- 49 simulation scenarios including five distinct practice settings were purchased or developed by five University nursing programs
- Approximately 86 clinical faculty, nursing faculty, other department faculty, and some community members were trained in the use of clinical equipment and/or involved with simulation learning.
- Over 3,000 students participated in simulation experiences and activities.
- All grantees developed and integrated a variety of scenarios and implemented simulation into core nursing curriculum to assure consistency in providing a standardized format of instruction in 14 distinct areas of clinical skills.

Model 1:

The Michigan Legislature, through P.A. 118 of 2007, P.A. 251 of 2008 and P.A. 130 of 2009, appropriated $6.8 million over three consecutive years (2008-2010) to fund the first MNC initiative to rapidly prepare nursing education faculty and increase institutional capacity within nursing education programs in support of increased nursing student enrollments and accelerated completion programs. The program was administered collaboratively between the Departments of Energy, Labor and Economic Growth and Community Health.

The MNC was created to address Michigan's looming nursing shortage by rapidly educating and producing new nursing educators to increase the number of educational faculty and clinical education sites to reduce the long wait periods currently experienced by applicants at nursing educational programs in Michigan.

MNC Model Programs:

A Request for Proposals (RFP) was issued with public universities, community colleges, and hospitals to collaborate and/or partner in responding to the RFP. Awards were made to eight (8) grantees across the state (Figure 1) with a goal that focused on educating nursing faculty in both the clinical and classroom setting through an accelerated platform. The MNC provided tuition and stipends for those nursing students in the Doctorate in Nursing Practice (PhD) and Master's in Nursing Education (MSN) who commit to teaching and practicing their discipline in Michigan after graduation.

Figure 1: LIST OF GRANTEES/PARTNERSHIPS

Partnerships	Public Universities – Community Colleges
DMC / Oakland Community College	Eastern Michigan University
William Beaumont Hospital/Oakland University	Michigan State University
Saginaw Valley State University/Covenant Healthcare	Northern Michigan University
University of Detroit Mercy/Trinity Health	Wayne State University

The focus for MNC grantees in the accelerated preparation of nursing education faculty included the following models:

1. Accelerated (within two years) graduation of PhD prepared nursing faculty.
2. Accelerated preparation of new Master's educated nurses within 15 months.
3. Accelerated Master's Nursing Faculty Education Programs for existing students in Michigan programs who are within 12 months of completing their degree/student teaching.
4. Education practice partnership models that train BSN prepared nurses in clinical instruction to increase nursing seats, clinical placements, and experiences for nursing students assuring timely completion of education requirements.

The length of the educational programs offered through the MNC varied based on the level of education. Most accelerated programs offered innovative curricula that averaged between 6 to 15 months for completion. Students were able to complete their program 6 to 12 months earlier with the accelerated platform offered through this initiative. Some practice partnerships also offered RN to BSN completion programs to increase the institution's ability to precept and provide clinical instruction to nursing students.

Grantees of the MNC were required to monitor and report on program performance assuring that time schedules and projected outcomes were being met. Data was reviewed, analyzed and compiled from quarterly progress reports with a final comprehensive summary report submitted at the end of the grant period.

Model 2:

In the 2010 Simulation Survey Responses, almost all nursing education programs reported owning and using low-fidelity simulation technology tools (called partial task trainers). Mid-fidelity and high-fidelity integrated simulators (mannequins with varying degrees of computerized, interactive behavior and response to treatment) were owned and used by more than 70% of programs; two-year programs at Community Colleges were slightly more likely to have high-fidelity simulators than were four-year programs. Half of respondents said their schools had computer-assisted instruction, and less than three percent reported having games specifically designed for nursing education. Survey respondents reported high levels of interest in acquiring all types of simulation technology.

The Michigan Legislature, through Public Act 186 of 2010, appropriated funding of $500,000 for the 2011 MNC to increase capacity through simulation education for Michigan's nursing students. The emphasis of this initiative was to provide resources for the purchase of simulation equipment and/or develop scenarios for simulators for clinical education. This collaborative effort between the Michigan Departments of Community Health and Licensing and Regulatory Affairs (formerly Department of Energy, Labor, and Economic Growth) resulted in awarding five proposals to various nursing education institutions resulting in the training of 86 faculty members for instruction utilizing simulation technologies and educating 3,036 students in various nursing, clinical competencies. Successful awardees of this grant initiative were Ferris State University, Grand Valley State University, Madonna University, Saginaw Valley State University, and Wayne State University. The focus and goal of these projects included operationalizing new simulation labs as well as expanding and integrating simulation to all areas of undergraduate and graduate nursing education programs. All five programs were able to demonstrate that utilization of simulation provided efficient, quality clinical learning experiences for nursing students.

The model for this initiative was to alleviate the bottleneck students may experience in timely completion of their education and provide a safe, standardized means to bridge classroom learning and real-life clinical experiences. The number of new nursing graduates is dependent on the number of nursing faculty available as well as clinical sites that are able to provide clinical experiences for nursing students.

While not able to fully replace clinical training, simulation labs allow nursing educational programs to reduce their reliance on scarce clinical sites. Clinical simulation learning engages and prepares a larger number of students in replicating specific clinical skills for patient assessment and care in a less stressful environment, prior to their live clinical experiences. Video capabilities in simulation labs provide an opportunity for students to review and reflect on their own performance and students are able to repeat practice of skills they are having difficulty learning. In addition, standardized clinical experiences enhance discussion and reflection in the classroom. This type of learning experience has resulted in greater student confidence in their competence. Advanced level nursing students also gain experience in emergencies, decision making, and working as a team through simulation.

Successes:

Model 1

Facility and hospital system continuity throughout the students' clinical experience facilitated increased growth in nursing skills by eliminating the need to learn new facility policies and processes as well as theory and skills. Previously underutilized clinical sites were used to their fullest extent. Collaborative efforts between educational institutions and hospital systems provided more efficient, rich clinical experience for the nursing students.

There was increased interest in clinical teaching among staff nurses completing their RN to BSN coursework. The continued commitment and support for these staff nurses from their healthcare employer confirmed the importance and significance of clinical education and helped them develop confidence in their clinical teaching and evaluation abilities.

Programs incorporated participation in community-based student teaching internships. In addition, all accelerated programs offered students the assistance of counselors and advisors to support continued progress and assure feasibility of graduation within program guidelines. Grantees reported increased retention of students compared to previous traditional cohorts.

Program Completion:

The number of new nursing faculty and clinical faculty educated through the MNC initiative totaled 175. All but two PhD and MSN prepared faculty were female with an age distribution of between 23 years and 62 years with the average age of 41 years. Age distribution of newly prepared clinical faculty was not available. *Figure 2* illustrates program completion of trained nursing faculty by level of education. Also noted is the projected increase in capacity of nursing students per year that will in turn enhance student retention and timely graduation, hence increasing the healthcare workforce.

Figure 2: PROGRAM COMPLETION / INCREASE CAPACITY

PhD.	MSN	Clinical Faculty	Total Faculty Trained	>Student Capacity
13	71	91	175	1,750/year

Employment:

Recipients participating in the MNC were provided tuition and stipends in return for their commitment to teach for five years at a nursing program located in Michigan upon graduation.

To date, approximately 52 newly prepared PhD and MSN nursing education graduates (Figure 3) have gained direct employment as faculty in Michigan nursing programs. Ninety-one newly trained clinical faculty members are employed in a health care system and provide clinical instruction to nursing students on site. The MNC recipients prepared as nursing faculty educators have secured employment at 29 of Michigan's 58 educational institutions offering nursing programs, including a mix of public, private, associate and bachelor degree programs.

The following table reflects the list of schools of nursing, type of faculty, and projected increase in student capacity per year:

Figure 3: NEWLY PREPARED FACULTY TO DATE

School	PhD	MSN	>Student Capacity
Baker College – Clinton Twp		3	30
Baker College – Owosso/Flint		3	30
Calvin College	1		10
Davenport University		2	20
Delta College		1	10
Eastern Michigan University		2	20
Ferris State University	1	1	20
Grand Rapids Community College		1	10
Grand Valley State University	4	2	60
Henry Ford Community College		4	40
Jackson Community College		1	10
Kellogg Community College		1	10
Kirtland Community College		1	10
Lake Superior State University		1	10
Lansing Community College		2	20
Macomb Community College		1	10
Madonna University		2	20
Michigan State University	2	5	70
Northern Michigan University		2	20
Oakland Community College		3	30
Oakland University	1	2	30
Rochester College		1	10
Saginaw Valley State University		1	10
Schoolcraft College		2	20
St. Clair County Community College		1	10
University of Detroit Mercy	2	2	40
Washtenaw Community College		3	30
Wayne County Community College		1	10
Wayne State University		6	60
Projected Total			**680**

NOTE: Numbers reflecting PhD and MSN nursing faculty educators represent both full time and part time instruction. Part time nursing faculty educators may be teaching concurrently at more than one school of nursing.

Technology:

Teaching methods included an innovative mixture of classroom, on-line, simulation and practice laboratory experiences, as well as clinical experiences. Clinical instruction was

assisted with DVDs in a skills lab and at clinical sites. Patient simulators were used to challenge and test students' clinical and decision-making skills during realistic patient care scenarios. Smart boards® with PowerPoint and Blackboard® were used in the lecture setting to facilitate more interactive learning and improved communication between classmates and instructors. On-line instruction provided distance learning access to rural students which contributed to enhanced success and increased graduation rates.

Model 2

Approximately 49 simulation scenarios were either purchased and/or developed by the five participating universities and encompassed a variety of medical and surgical circumstances and settings including: psychiatric-mental health virtual case scenarios adapted for a web-based learning environment, normal and high risk delivery (newborn assessment, mechanisms of labor, baby asphyxia), pediatrics, poverty, therapeutic communication, health screening & literacy, trauma, lifespan assessment, infection control, prevention of complications, and communication skills. These scenarios also addressed guidelines from Commission on Collegiate Nursing Education (CCNE) accreditation criteria, Quality & Safety Education for Nurses (QSEN) competencies, and integration of evidence in the scenarios. (See Table 1)

Table 1: SIMULATIONS PURCHASED / DEVELOPED

Type of Simulation	
Antibiotic Reaction – strep, pneumonia	Maternal
Asthma	Maternity – mechanisms of labor
Bowel Obstruction	Metabolic Syndrome
Myocardial Infarction	Obsessive compulsive behavior
COPD	Pancreatitis
Coronary Artery Disease	Pediatric
CVA – Ischemic stroke	Post Traumatic Stress Disorder
Delivery – Assessment, high risk, asphyxia	Postoperative – hysterectomy, hemicolectomy, pulmonary embolism, blood transfusion, hip arthroplasty
Depression – Cognitive, Peri-partal	Poverty
Diabetes (hypoglycemia, insulation administration)	Prevention-patient falls
Fractures	Psychiatric-Mental Health
Health Screening - Literacy	Respiratory
Heart Disease	Substance Abuse
Hypothermia	Surgical
Hysterectomy - Abdominal	Therapeutic communication
IV	Trauma
Kidney injury	Ventricular Fibrillation
Lifespan health assessment	

Approximately 86 clinical faculty, nursing faculty, other department faculty, and some community members were trained in the use of clinical equipment and/or involved with

simulation learning. Projects reported inter-professional collaboration and engagement of all faculty in providing expertise and oversight. The grantees report that development of scenarios gave faculty greater clinical knowledge and enhanced their proficiency in instruction and converting theory into practice. Their input was beneficial to the students learning as well as their own professional development. (See Table 2)

The utilization of simulation laboratories was highly successful with approximately 3,036 students having participated in simulation experiences and activities. Students expressed a better understanding of theory and found simulation to be a valuable learning experience. Many students gained more confidence in the application of their skills, meeting some of the core clinical competencies through simulation prior to actual on-site clinical instruction. (See Table 2)

Table 2: FACULTY TRAINED / STUDENT EXPOSED / EDUCATION LEVEL

Grantee	Faculty Trained	Students Impacted	Level of Education
Ferris State University	11	176	BSN
Grand Valley State University	1	120	BSN
Madonna University	29	211	BSN
Saginaw Valley State University	27	252	BSN, Other Health & Human Svs undergrads
Wayne State University	18	2,277	BSN, MSN
TOTAL	**86**	**3,036**	

All grantees developed and integrated a variety of scenarios and implemented simulation into core nursing curriculum to assure consistency in providing a standardized format of instruction. The importance of this training has resulted not only in sustainability of the model but also strengthened commitment by faculty and university administration. Clinical simulation promotes consistency and provides a standardized experience that helps to fulfill the demands of specialty clinical experiences in today's healthcare system and meets educational objectives.

Most nursing education institutions use several types of simulation such as computerized mannequins and web-based environments. Simulation technology acquired by grantees varied with high-fidelity equipment and supplies as well as software for specific scenarios. Simulation equipment and supplies included items such as: Sim Man, Sim Junior, birthing manikins with infant, IV monitors, stethoscopes, Doppler, laptop computers, software, audio, ultrasound machines, and MedStations. (See Table 3).

Table 3: SIMULATION TECHNOLOGY PURCHASED

Technology Description	
Environmental support equipment Moulage, sheets, etc. – enhance simulation	
Sim Mom Birthing	2
Nursing Manikin	1
Sim Baby	1
Sim Junior	3
Stethoscopes (neonatal)	2
Doppler & supplies	1
Laptop computers & access. (cables)	3
IO Infusion (Intraosseous infusion)	1
SimPad w/access.	5
Med Cart	1
Boom Microphone for videotaping	1
IV Monitors	2
Med Dispense	1
Ultrasound	2
IO Drill/IO needles	1
EHR – Sim Chart	1
Infant Warmer/Incubator	1
Pediatric Bed	1
SimMan Med Station	1
Sim Mom access. (camera, audio, USB cables)	1
Pediatric SAO2 (oxygen saturation)	1
5-lead cardiac cable	2
Software for simulation & development	5

Lessons Learned:

Model 1:

Recent workforce studies pointed to an imminent shortage of nursing faculty and nurses in Michigan. The MNC was developed to rapidly prepare nursing faculty to address this shortage. Recipients of MNC funds were obligated to teach full time for a period of five years. However, the changing health care environment and Michigan's declining economy resulted in many existing nursing faculty delaying retirement. This delay affected many of the MNC participants in securing full time employment as a nursing faculty educator. Due to the difficulty in securing full time employment, participants were allowed to obtain part-time employment extending their teaching obligation to the State of Michigan beyond the initial five-year period. In addition, 33 participants did not secure full or part time employment and defaulted on their obligation to the State of Michigan and are currently repaying or have paid in full the stipend award they received.

Michigan will continue to experience a severe nursing faculty shortage. The PhD and MSN graduates of the MNC have provided a portion of the needed nursing faculty in Michigan's nursing education programs, which has resulted in additional nursing student slots in both two-year and four-year educational institutions offering nursing programs. The commitment to continually increase nursing faculty educators is essential for the production of new nurses and will help to meet the growing demand today and in the future.

Model 2:

Many of the MNC Simulation grantees indicated that simulation education was more complex and time consuming than originally projected and that flexibility was crucial in the successful implementation of a simulation lab. Hiring knowledgeable individuals who possess simulation instruction skills provided the leadership needed for success as well as simulation training for faculty. Engaging multiple, knowledgeable faculty and staff members in simulation efforts was important to assure continuity in development and application of scenarios. Frequent communication with faculty regarding the availability of simulation equipment and scenarios and opportunities was important for inter-professional collaboration, learning and teamwork with simulation was important.

The delayed release of funding to simulation initiative grantees impacted the delivery and training of simulation technology/equipment, resulting in limited usage of the simulators. Students not yet trained in clinical instruction were found to be uncomfortable with the simulation experience; however strategies were being implemented to provide a fulfilling and seamless experience.

Sustainability:

Model 1:

Nursing educational programs report ongoing production of clinical faculty through continued educational and health system partnerships. In addition, faculty that was produced by the Nursing Corps Program continues to facilitate increased student enrollment in nursing educational programs.

Model 2:

100% of grant recipients reported commitment from their university to support continued use of the simulation activities developed through the Nursing Corp initiative and build upon their achievements for future development of simulation technology in their nursing programs. All participating nursing programs were able to demonstrate the value of simulation technology as a teaching tool and its usefulness in meeting the educational objectives and demands of clinical experiences required in today's healthcare system. All grantees reported that they received a commitment of support from their educational institutions for continuation of their simulation labs including ongoing purchase of necessary maintenance and accessory equipment, resources for clinical coordinators, and ongoing training and commitment of clinical nursing faculty.

Simulation instruction has helped increase student confidence, provided exposure to standardized experiences, improved critical thinking skills, and helped increase the ability of the school/program to prepare students for clinical experiences. Innovative simulation is an important approach in dealing with the nursing faculty shortage and the shortage of clinical placements. Alleviating some of the bottlenecks nursing students experience in completing their education helps to provide a safe, standardized means to bridge classroom learning and real-life clinical experiences.